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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BRADLEY, MATTHEW A	

ART UNIT	PAPER NUMBER
2187	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/737,189	MAKELA ET AL.	
	Examiner	Art Unit	
	Matthew Bradley	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Office Action has been issued in response to amendment filed 30 May 2006. Applicant's arguments have been carefully and fully considered but are moot in view of the new ground(s) of rejection as necessitated by amendment. Accordingly, this action has been made FINAL.

Claim Status

Original claims 1, 3-18 and newly added claims 19-27 remain pending and are ready for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1**, **3-17**, and **19-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Spilo (U.S. 5,559,978) and in view of Geiger et al (U.S. 2002/0073298) herein after referred to as Geiger.

As per independent claim **1**, Spilo teaches,

- determining whether additional memory space is needed in said memory; (Column 3 lines 48-50).
- if additional memory space is needed, compressing selected portions of memory content stored in said memory; and (Column 3 lines 54-56).

- releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space; (Column 4 lines 33-36).

Spilo does not teach utilizing compression tables.

Geiger teach, wherein a plurality of fixed compression tables are defined for realizing said compression, each fixed compression table associating possible values of memory content to values of a compression code, said method further comprising associating to a respective portion of memory content the fixed compression table resulting in the highest compression when applied to this portion of memory content (Paragraph 0031). *The Examiner notes that the system of Geiger teach a plurality of compression algorithms that are used to compress data, thus anticipating the instant limitation of a plurality of fixed compression tables. Further, the system of Geiger teach employing the compression ratio which yields the highest compression, thus anticipating the instant limitation of selecting the highest compression when applied to a portion of memory (page in memory as taught by Geiger).*

Spilo and Geiger are analogous are because they are from the same field of endeavor, namely compression of memory.

At the time of invention it would have been obvious to one of even rudimentary skill in the art, having both the teachings of Spilo and Geiger before him/her to combine the compression method of Geiger into the system of Spilo to exploit the compressibility options of Geiger at least allowing highest compression to save memory space and not have a need to add additional memory.

The suggestion for doing so would have been that, a method (taught by Geiger) of increasing the effective size of system memory without increasing actual physical memory (Paragraph 0014 of Geiger).

Therefore, it would have been obvious to combine Spilo with Geiger for the compression method for the benefit of increasing memory space without increasing actual physical memory to obtain the invention as specified in claims 1, 3-17, and 19-27.

As per independent claim **16**, the combination of Spilo and Geiger teach,

- a monitoring component monitoring whether additional memory space is needed in a memory; and (Column 3 line 63 to Column 4 line 12 of Spilo)
- a compression component compressing selected portions of memory content stored in said memory, in case said monitoring component determines that additional memory space is needed, and (Column 4 lines 13-29 of Spilo)
- releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space, (Column 4 lines 33-36 of Spilo).
- wherein a plurality of fixed compression tables are defined for realizing said compression, each fixed compression table associating possible values of memory content to values of a compression code, said compression component being further adapted to associate to a respective portion of memory content the fixed compression table resulting in the highest compression when applied to this portion of memory content

(Paragraph 0031 of Geiger). *The Examiner notes that the system of Geiger teach a plurality of compression algorithms that are used to compress data, thus anticipating the instant limitation of a plurality of fixed compression tables. Further, the system of Geiger teach employing the compression ratio which yields the highest compression, thus anticipating the instant limitation of selecting the highest compression when applied to a portion of memory (page in memory as taught by Geiger).*

As per independent claim **17**, the combination of Spilo and Geiger teach,

- a memory; and (Paragraph 0068 of Geiger)
- a memory manager monitoring whether additional memory space is needed in said memory, compressing selected portions of memory content stored in said memory, in case it is determined that additional memory space is needed, and (Paragraph 0068 of Geiger)
- releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space (Column 4 lines 33-36 of Spilo).
- wherein a plurality of fixed compression tables are defined for realizing said compression, each fixed compression table associating possible values of memory content to values of a compression code, said compression component being further adapted to associate to a respective portion of memory content the fixed compression table resulting in the highest compression when applied to this portion of memory content

(Paragraph 0031 of Geiger). *The Examiner notes that the system of Geiger teach a plurality of compression algorithms that are used to compress data, thus anticipating the instant limitation of a plurality of fixed compression tables. Further, the system of Geiger teach employing the compression ratio which yields the highest compression, thus anticipating the instant limitation of selecting the highest compression when applied to a portion of memory (page in memory as taught by Geiger).*

Claim 26 is interpreted under 35 U.S.C. 112, 6th paragraph.

The Court of Appeals for the Federal Circuit, in its en banc decision In re Donaldson Co., 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994), decided that a "means-or-step-plus-function" limitation should be interpreted in a manner different than patent examining practice had previously dictated. The Donaldson decision affects only the manner in which the scope of a "means or step plus function" limitation in accordance with 35 U.S.C. 112, sixth paragraph, is interpreted during examination. Donaldson does not directly affect the manner in which any other section of the patent statutes is interpreted or applied.

When making a determination of patentability under 35 U.S.C. 102 or 103, past practice was to interpret a "means or step plus function" limitation by giving it the "broadest reasonable interpretation." Under the PTO's long-standing practice this meant interpreting such a limitation as reading on any prior art means or step which performed the function specified in the claim without regard for whether the prior art means or step was equivalent to the corresponding structure, material or acts described in the specification. However, in Donaldson, the Federal Circuit stated:

> Per our holding, the "broadest reasonable interpretation" that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination. (MPEP 2181)

Accordingly, the Examiner notes that the means or system/structure for practice of the invention disclosed on page 13 and as Figure 1 of applicant's specification is further taught in at least Geiger in paragraph 0068.

As per independent claim **26**, the combination of Spilo and Geiger teach,

- means for monitoring whether additional memory space is needed in a memory; and (Column 3 line 63 to Column 4 line 12 of Spilo)

- means for compressing selected portions of memory content stored in said memory, in case said monitoring component determines that additional memory space is needed, and (Column 4 lines 13-29 of Spilo)
- for releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space, (Column 4 lines 33-36 of Spilo).
- wherein a plurality of fixed compression tables are defined for realizing said compression, each fixed compression table associating possible values of memory content to values of a compression code, wherein said means for compressing is further for associating to a respective portion of memory content the fixed compression table resulting in the highest compression when applied to this portion of memory content (Paragraph 0031 of Geiger). *The Examiner notes that the system of Geiger teach a plurality of compression algorithms that are used to compress data, thus anticipating the instant limitation of a plurality of fixed compression tables. Further, the system of Geiger teach employing the compression ratio which yields the highest compression, thus anticipating the instant limitation of selecting the highest compression when applied to a portion of memory (page in memory as taught by Geiger).*

As per dependent claims **3**, **19**, and **27**, the combination of Spilo and Geiger teach, wherein said fixed compression tables are predetermined (Paragraph 0031 of

Geiger). *The Examiner notes that a plurality of algorithms are taught by Geiger as being present in the system and are thus predetermined.*

As per dependent claims **4** and **20**, the combination of Spilo and Geiger teach, wherein said fixed compression tables are generated at an initialization of said memory based on available portions of memory content (Paragraph 0131 of Geiger).

As per dependent claim **5**, the combination of Spilo and Geiger teach, wherein said fixed compression tables are updated at regular intervals based on available portions of memory content (Paragraph 0088 of Geiger).

As per dependent claims **6** and **21**, the combination of Spilo and Geiger teach, wherein in addition to said fixed compression tables, a null-table is provided which can equally be associated to a respective portion of memory content and which causes that no modification is applied to a selected portion of memory content to which said null-table is associated (Paragraph 0099 of Geiger).

As per dependent claims **7** and **22**, the combination of Spilo and Geiger teach, wherein in addition to said fixed compression tables, an own-compression-table is provided which can equally be associated to a respective portion of memory content and which indicates that a portion of memory content to which it is associated has its own compression algorithm co-located and that this own compression algorithm is to be used for a compression of said portion of memory content when selected (Paragraph 0132 of Geiger). *The Examiner notes that the system of Geiger teach certain pages not being compressed. Thus the compression algorithm associated with these pages is one of no compression.*

As per dependent claims **8** and **23**, the combination of Spilo and Geiger teach, wherein a fixed compression table is associated to a respective portion of memory content when said portion of memory content is written into said memory (Paragraph 0095 of Geiger).

As per dependent claim **9**, the combination of Spilo and Geiger teach, wherein a fixed compression table is selected for association to a particular portion of memory content based on samples of said particular portion of memory content (Paragraph 0095 of Geiger).

As per dependent claim **10**, the combination of Spilo and Geiger teach, wherein portions of memory content are selected for compression which belong to a currently inactive process (Column 3 lines 12-15 of Spilo). *The Examiner notes that regions (portions) are determined to be non-critical. These regions are then compressed. Accordingly, regions that are non-critical belong to a process that is currently inactive.*

As per dependent claims **11** and **24**, the combination of Spilo and Geiger teach, wherein different priorities are assigned to different portions of memory content, and wherein those portions of memory content are selected for compression to which the lowest priority has been assigned among all uncompressed portions of memory content (Column 3 lines 12-15 of Spilo). *The Examiner incorporates herein by reference the comments made supra with respect to dependent claim 10.*

As per dependent claim **12**, the combination of Spilo and Geiger teach, further comprising monitoring whether sufficient memory space is available in said memory and

decompressing compressed portions of memory content of said memory as soon as sufficient memory space is available in said memory (Column 4 lines 38-45 of Spilo).

As per dependent claims **13** and **25**, the combination of Spilo and Geiger teach, further comprising decompressing a compressed portion of memory content of said memory as soon as a process to which said compressed portion of memory content belongs becomes active (Column 4 lines 38-45 of Spilo).

As per dependent claim **14**, the combination of Spilo and Geiger teach, further comprising when reporting to an application the status of the memory, reporting a status which would be given in case of a completely decompressed memory content (Paragraph 0082 of Geiger).

As per dependent claim **15**, the combination of Spilo and Geiger teach, wherein said memory is an executable memory, to which said portions of memory content are provided by a solid-state memory based on demand paging (Paragraph 0077 of Geiger).

Claim **18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Spilo in view of Geiger and further in view of Rubinstein, (U.S. 5,913,215) herein after referred to as Rubinstein.

The combination of Spilo and Geiger teach does not expressly teach that a method is performed by a software series of instructions, instead disclosing the method.

Rubinstein teaches on Column 10 lines 3-15 that computer methods may be performed either by a series of instructions, or by specific hardware components that contain hard-wired logic for performing the method, or by any combination of the two.

The combination of Spilo and Geiger, and Rubinstein are analogous art because they are from the same general field of endeavor, namely computer-controlled methods.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the combination of Spilo and Geiger by embodying it in executable instructions.

The motivation for doing so is portability and ease of installation. For example, it is well known that a method encoded in a program may be installed onto different systems much more quickly and easily than can hardware components designed to perform the same method.

Therefore, it would have been obvious to combine the combination of Spilo and Geiger, with Rubinstein for the benefits shown above, to obtain the invention as specified in claims 18.

As per independent claim **18**, the combination of Spilo and Geiger, and Rubinstein teach,

- determining whether additional memory space is needed in said memory; (Column 3 lines 48-50 of Spilo).
- if additional memory space is needed, compressing selected portions of memory content stored in said memory; and (Column 3 lines 54-56 of Spilo).
- releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space (Column 4 lines 33-36 of Spilo).

- wherein a plurality of fixed compression tables are defined for realizing said compression, each fixed compression table associating possible values of memory content to values of a compression code, wherein said means for compressing is further for associating to a respective portion of memory content the fixed compression table resulting in the highest compression when applied to this portion of memory content (Paragraph 0031 of Geiger). *The Examiner notes that the system of Geiger teach a plurality of compression algorithms that are used to compress data, thus anticipating the instant limitation of a plurality of fixed compression tables. Further, the system of Geiger teach employing the compression ratio which yields the highest compression, thus anticipating the instant limitation of selecting the highest compression when applied to a portion of memory (page in memory as taught by Geiger).*

Response to Arguments

Applicant's arguments filed 30 May 2006 have been carefully and fully considered but are moot in view of the new ground(s) of rejection as necessitated by amendment.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Bradley whose telephone number is (571) 272-8575. The examiner can normally be reached on 6:30-3:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A. Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BRP/mb

Brian R. Peugh
Primary Examiner
8/24/06